**canadian arctic gas study limited**
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WASHINGTON: A $5 billion pipeline from the Arctic could provide the United States with about a six per cent increase in its natural gas supplies by the end of this decade.

But the project will have to be demonstrated to be clearly in the interest of Canada as well as the United States, William P. Wilder, chairman of the consortium of 25 U.S. and Canadian companies planning the project, told the U.S. - Canada energy supply committee of the National Association of Regulatory Utility Commissioners in Washington Tuesday.

Gas could start flowing through the pipeline as early as mid-1977 if no delays are encountered, Mr. Wilder stated. He stressed the importance to both countries of avoiding delays.

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Alaskan Arctic Gas Study Company and Canadian Arctic Gas Study Limited have to date spent $30 million examining the feasibility of the 3,000-mile pipeline which would transport gas from the North Slope of Alaska and the Mackenzie Delta region of Canada.

At full compressor horsepower, the 48-inch diameter pipeline would be able to deliver natural gas at a rate in excess of four billion cubic feet per day.

About half of this supply is expected to be U.S. gas from Alaska, and half Canadian gas from the Mackenzie Delta. All of the U.S. gas and a substantial portion of the initial flow of Canadian gas is expected to go to U.S. markets, Mr.Wilder said.

Additional 48-inch pipe could be installed to steadily expand the capacity of the system as more gas reserves in the Arctic are developed, he said.

"Since exploration to date has barely scratched the surface of reserves in this region, the increase in supplies provided by an overland pipeline could potentially be much greater than six per cent," according to Mr. Wilder.

The Arctic Gas companies hope to file applications by late summer with U.S. and Canadian government agencies for approval to build and operate the pipeline, he told representatives of the state utility regulatory agencies. Barring any delays, he estimated that approvals might be obtained early in 1975, allowing construction to start late that year. Gas could then start flowing from the Mackenzie Delta by mid-1977, and from the Alaska North Slope the following year. Full delivery capacity of the single 48-inch line could be achieved by 1980, and further capacity beyond that would require the installation of additional short sections of more 48-inch pipe.

But before the project can secure required approvals, it faces a maze of regulatory proceedings before government agencies in both countries.

The need for additional gas supplies in both countries requires early approval, according to Mr. Wilder. In addition, inflation at a five percent rate adds $250 million per year to the cost of the pipeline, and thus to the cost of the gas for the consumers. Finally, excessive delay could result in several large energy projects proceeding simultaneously, with the possibility of straining construction, equipment and financial resources.

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Although Canada's interest in the pipeline may not be "as dramatically apparent as the U.S. need for more gas," according to Mr. Wilder, "there are compelling factors which do make this project equally essential to Canada. And we are confident that exhaustive examination before agencies of the government of Canada will convincingly demonstrate this."

Transportation of both Canadian and U.S. gas will provide economies of scale of benefit to both countries, Mr. Wilder said. Although each country"must find the pipeline to be in its own best interests," he expressed the view that of paramount importance is "that the interest of each country can best be served by the mutual co-operation required," to make the pipeline possible. "... while the problems are multiple, the project is so important to both our nations that we cannot afford to view the hurdles as roadblocks, and I do not expect to encounter any which we cannot clear," Mr. Wilder concluded.

TEXT FOR DELIVERY BY W. P. WILDER, CHAIRMAN
CANADIAN ARCTIC GAS STUDY LIMITED TO THE
AD HOC COMMITTEE ON U.S. - CANADA ENERGY
SUPPLY OF THE NATIONAL ASSOCIATION OF
REGULATORY UTILITY COMMISSIONERS,
WASHINGTON, D.C. - FEBRUARY 27, 1973

It was almost exactly one year ago in this hotel that Wilbur Mack, of American Natural Gas, and Sy Orlofsky, of Columbia Gas, briefed members of your Ad Hoc Committee on United States - Canada Energy Supply on the progress of two groups then proposing pipelines to transport natural gas from the Arctic.

A lot has happened during this past year, and I am delighted at the opportunity to tell you about the progress that has been made.

The most significant development, of course, was the consolidation of the efforts of the two groups - Gas Arctic Systems and the Northwest Project Study Group, which was achieved last June.

The wide ranging programs of studies launched by these two groups are now being continued by the Arctic Gas companies, Canadian Arctic Gas Study Limited, and Alaskan Arctic Gas Study Company.

I can recall reading in the newspapers one year ago reports of the information that Mr. Mack and Mr. Orlofsky presented to you at that time. And that was close to my knowledge at that time about plans for a gas pipeline from the North Slope of Alaska. So you will appreciate that I had my homework cut out for me when I accepted, effective last September 1st, the position of chairman and chief executive officer of Arctic Gas.

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I might at first have felt somewhat naked in this position had it not been for the good fortune of both myself and Arctic Gas to have at the same time secured the services of Vern Horte, formerly president of TransCanada PipeLines, as President of Arctic Gas.

Since September we have been busy building strong management and technical teams. Executive offices have been established in Toronto, and engineering and technical offices in Calgary with a staff now totalling some 55 dedicated people.

New members have joined the group, so that to-day Arctic Gas is backed by 25 large firms, including 14 Canadian companies, representing a pooling of resources and skills which have perhaps never been matched.

A year ago, plans for an Arctic Gas pipeline were predicated almost entirely upon the reserves which had been discovered on the Alaskan North Slope. But aggressive exploration in the Mackenzie Delta on the Canadian side of the Arctic has now proved this as a second major potential supply source for the pipeline.

The pipeline we now envision will, depending on final route selection, involve up to about 3,000 miles of 48-inch diameter pipeline to transport U.S. and Canadian Arctic gas to U.S. and Canadian markets, at an investment cost in the order of $5 billion.

SHOW ROUTE SLIDE:

Our studies have embraced a wide range of alternative routes, which have been narrowed down to those shown on this map.

In the north, the principal alternatives involve two options from Prudhoe Bay across Alaska. One route stretches east from Prudhoe along the Arctic coastal plain, crossing the Alaska Wildlife Range and the Yukon, then north up the Mackenzie River Valley. The other route skirts the Wildlife Range by crossing the Brooks Mountains in Alaska and the Richardson Mountains in the Yukon. The coastal route is shorter, appreciably less costly, would traverse a greater area of potential gas supply, and, we have been tentatively advised by our consultants, may involve less risk of environmental impact.

South of the 60th parallel of latitude, we are now involved in final studies of a number of alternatives, including the possible use of existing transmission facilities which would have to be expanded to handle additional volumes of gas.

At full compressor horsepower, the pipeline will be able to deliver gas at a rate in excess of four billion cubic feet per day, after which additional capacity can be steadily added as the large potential Arctic gas supplies are developed.

Of the four billion cubic feet per day delivery through a fully-powered, single 48-inch pipeline, we expect that about half will come from the North Slope of Alaska, and half from the Mackenzie Delta. Thus the line would transport about equal volumes of U.S. and Canadian gas. We would expect all of this U.S. volume plus a substantial portion of the initial Canadian volume to flow to U.S. markets. This would represent an increase in the order of six percent in the gas supply presently available to U.S. consumers.

As exploration develops more of the large potential Arctic gas reserves in both

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Alaska and northwest Canada, the pipeline capacity could be steadily expanded with incremental looping of additional 48-inch diameter pipe. Since exploration to date has barely scratched the surface of reserves in this region, the increase in supplies provided by an overland pipeline could potentially be much greater than six percent.

I need not dwell before this audience of the significance to the United States of such a prospective increase in gas supplies. But I must in frankness tell you that this project must be demonstrated to be equally in the best interests of Canada if it is to secure approval and the benefits of economic overland transportation of Arctic gas are to be realized. It will be the determination of Canada's interests in the course of public examination during the next 24 months or so upon which the fate of this pipeline will to a substantial degree depend. Although they may not be as dramatically apparent as the U.S. need for more gas, we believe that there are compelling factors which do make this project equally essential to Canada. And we are confident that exhaustive examination before agencies of the government of Canada will convincingly demonstrate this. I will explore this aspect in more depth a little later.

Starting with the first preliminary feasibility studies, the Arctic Gas research work has now been underway for more than five years, and expenditures to date total some $30 million. The objective has been to examine in detail every aspect of the engineering, economic and environmental feasibility of the pipeline. In addition to its own technical staff, Arctic Gas employs some 30 consultants and research organizations on its wide range of study programs. These embrace aspects as

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diverse as metallurgy, soils mechanics, thermodynamics, transportation and logistics, sociology, economics and wildlife biology, to mention only some. It is difficult to imagine a program of studies involving a greater range of disciplines. I will not take the time to detail all our study programs but will refer you to copies of the brochure which we have available here.

It is our intent to file with U.S. and Canadian regulatory authorities as soon as we have obtained from our studies all of the information we feel is required to properly support applications for approval to construct and operate the proposed pipeline. We hope to file our applications late this summer.

If we encounter no delays, we might anticipate final approvals within 18 months of our filings, or about two years from now.

If this can be achieved, it would permit assembly and delivery of initial materials and construction equipment during the summer of 1975, and start of construction during the winter of 1975-76. Construction in the north will be limited to a winter season of about 4 months. With careful planning, we would hope to build the northern end of the system as far as the Mackenzie Delta gas reserves during two winter seasons, 1975-76, and 1976-77. The southern portion across the Canadian prairies could be built during the summer and fall of 1976. This would permit the start of gas flow from the Mackenzie Delta by mid-1977, with the extension of the pipeline to the Alaskan North Slope gas during the following winter. Installation of full compressor horsepower and deliverability capacity would be completed by 1980.

This is the most optimistic schedule that we can project, and its attainment will

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depend primarily upon the length of time required to obtain government approvals. Avoidance of delay so as to realize such a schedule would result in important advantages to both the United States and Canada.

The most obvious, of course, is the urgency of providing additional gas for U.S. markets. But just as important is the fact that Canadian markets will, we feel, by the end of this decade require access to gas supplies from the Arctic in order to ensure that Canadian market demands will be fully satisfied.

Cost escalation is another factor in the time frame. With an inflation factor in the order of five percent, delay on a $5 billion project adds to the cost of the pipeline, and thus to the cost of the gas for the consumers, at a rate of $250 million per year, or $1 million for each working day.

It is also highly desirable to accomplish the bulk of our financing before the critical phases of financing are reached by other major Canadian projects, such as the James Bay hydro-electric power development, and before these projects place demands upon skilled manpower, materials and financial resources.

The round of hearings for which Arctic Gas is now preparing will be unusual in many respects, unique in some, and almost unbelievably complex from every point of view.

Except for the short section of the Westcoast Transmission system serving Pointed Mountain, this will be the first gas pipeline in Canada north of the 60th parallel.

Involving the export of gas from Alaska into Canada and then export back to the

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United States, it will be the first major import and re-export pipeline in Canada. It will be the first time that the sponsor of a pipeline proposal has been required to submit to Canadian authorities a separate and comprehensive assessment of the probable impact of the line on the environment. Finally, hearings will be convened by the Department of Indian Affairs and Northern Development, we are told ... another first.

Similarly, in the United States there will be a very major application to the Federal Power Commission, and our project will also involve permits from the Department of the Interior. In both countries we will face some new procedures and questions. The whole way of proceeding is so new that none of us knows exactly what to expect.

There is at least one more important respect in which the situation this time will differ materially from those we have experienced.

Under Canadian law, interprovincial and international pipelines fall within the jurisdiction of the National Energy Board. So does the export of gas. It is thus quite usual for a company such as TransCanada PipeLines, which is a buyer and seller of gas as well as a pipeline operator, to be the applicant simultaneously for a certificate of public convenience and necessity and for an export license; and for the NEB to hear both applications at once.

We plan, however, to operate the Arctic pipeline as a carrier of gas, without buying and selling the gas. The pipeline will contract with the owners for the movement of gas which may be offered for shipment. One effect of this is that the applications resulting from our studies will be made by two groups of entities. Our Canadian

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company will apply for a pipeline construction certificate, and permission to carry U.S. gas through Canada, plus permission to move Canadian gas to Canadian market areas. U.S. firms purchasing gas in the Mackenzie Delta must have Canadian approval for its export and U.S. approval for its import. Owners of Alaskan gas must obtain approvals to export and import gas from and into the United States.

The National Energy Board, in November, 1971, made a finding that there was not sufficient gas in Canada, over and above Canada's reasonably foreseeable requirements, to permit the granting in full of all of the applications then before it. The export licenses it did issue on that occasion left Canada, in the Board's view, with no exportable surplus. That has been the situation ever since. There have been no further export authorizations.

In the meantime Canada's energy requirements have been increasing at a more rapid rate than had been expected five years ago.

The crucial question is whether or not proved resources of natural gas in Canada have increased at a rate greater than demand so as to create an exportable surplus.

In turn, the crux of this involves the new Arctic gas supplies on the delta of the Mackenzie River. It is vital to our proposal that the National Energy Board not only recognize these reserves as proven, but place them in the category of those within economic reach. We believe that when this is done, there will be a clear exportable surplus which will allow the granting of the export applications which will accompany our pipeline application.

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The regulatory assessment of our project will include considerations which do not ordinarily enter into the assessment of the worthiness of a pipeline project. Just as one example, as you have no doubt heard, northern Canadians of Indian and Eskimo ancestry are holding discussions with the Canadian government relative to their claims either to land or to compensation for land, as happened in Alaska. We take no position on this question, since it is one properly involving only the northern people and the government. But we are conscious that we must show that our project will not be detrimental to the interests of northern people. We expect, in fact, to show that they will be substantially benefited.

Another area in which both the government and the Canadian public are interested concerns the environment and ecology. As we must do in the United States, we will be submitting an environmental impact statement in support of our application to the Canadian government for a land use permit for the right-of-way through the Yukon and Northwest Territories. Although procedures have not yet been announced, it appears that, for the first time, this application will be heard in public by nominees of the Department of Indian Affairs and Northern Development.

We must, of course, also file an application to the National Energy Board for a pipeline certificate. The NEB will be concerned not only with the normal pipeline application issues, but also such aspects as the probable impact that financing such a massive project will have on the Canadian economy, including such factors as the foreign exchange rate.

We will have to convince the National Energy Board; the Government, which possesses the power of veto over the Board's approval; and the people of the country, who

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possess the power of life and death over the Government, that the project is sound and is in Canada's interest.

Finally, in all probability, we will have to demonstrate our ability to achieve our objective of attaining at least 51 percent Canadian equity ownership of the Canadian portion of the pipeline.

I have dealt today, in accordance with my assignment, mainly with the hurdles to be cleared in Canada. Our United States company, Alaskan Arctic Gas Study, will, as you know, also have substantial procedures to go through in the United States, and critics to convince.

Despite the reservations which now exist in some quarters in Canada, we believe that compelling factors make the pipeline vital to Canada's interest too, and that this will become convincingly clear during the course of hearings on our applications.

For Canada, the pipeline will mean:

- Hundreds of millions of dollars in direct government revenues from petroleum lease rentals and royalty payments on natural gas production, in addition to large tax revenues of various forms;

- An important stimulation of the national economy, with significant effects on employment;

- Provision of urgently required job opportunities in the severely economically depressed region of Canada's north.

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Most important of all, it will mean access to an additional supply of natural gas which Canadian consumers will require by the end of this decade.

Back home, we have said that Canada needs a pipeline from the Arctic because Canada needs natural gas from the Arctic. And that is true. We have also said that it will only be by means of taking advantage of the economies of scale provided by the much larger U.S. market that Arctic gas can be made economically available to Canadian consumers. You need only to realize that in order to be economically feasible the pipeline must deliver gas at a rate about one-third greater than the total demand for gas in Canada to appreciate that this, also, is correct.

But the converse is equally true. If Canada can benefit from the economies of scale provided by U.S. markets and a flow of U.S. gas through the pipeline, it is just as true that the United States can benefit in similar fashion from the flow of Canadian gas through the pipeline. And we believe that, as in Canada, we will be able to demonstrate that the Alaska portion of the line will benefit the people of Alaska also.

We appreciate that each country must find the pipeline to be in its own best interests. But the paramount point, we believe, is that the interests of each country can best be served by the mutual co-operation required to make possible a project of such enormous undertaking.

Let me illustrate just one example of the type of co-operation that will be required. Suppose that the government of Canada were to determine, for example, that the appropriate route to build and operate a pipeline through permafrost without

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initiating thermal erosion and so forth, is along the Arctic coast and across the Yukon. But suppose that U.S. authorities say, "Yes, you can build your pipeline provided it follows the inland route through Alaska."

I don't like to think about that except as a joke, but it does serve to illustrate why we are never bored. Yet, while the problems are multiple, the project is so important to both of our nations that we cannot afford to view the hurdles as roadblocks, and I do not expect to encounter any which we cannot clear.

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